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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,373	01/15/2002	Gurtej S. Sandhu	MI22-1896	7531
21567	7590	11/01/2006	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			SCHILLINGER, LAURA M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/050,373

Applicant(s)

SANDHU ET AL.

Examiner

Laura M. Schillinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 11-19 and 48-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-19 and 48-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/2/06.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

**Allowability is withdrawn due to newly discovered art.**

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 11-19 and 48-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Moore ('543).

Moore teaches the following claimed limitations as cited below:

Claim 11 (previously presented): A method of forming a nitrogen-enriched region within a silicon-oxide-containing layer, comprising:

providing the silicon-oxide-containing layer over a substrate (Fig.3 (18));

the silicon-oxide- containing layer having a bare upper surface above the substrate and a lower surface on the substrate (Fig.3 (18));

exposing the silicon-oxide-containing layer to an activated nitrogen species from a nitrogen-containing plasma to introduce nitrogen into the silicon-oxide- containing layer and form a nitrogen-enriched region, the nitrogen-enriched region being only in an upper half of the silicon-oxide-containing layer (Fig.4 (22) and Col.3, lines: 25-35); and

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thermally annealing the nitrogen within the nitrogen-enriched region, while the bare upper surface of the silicon-oxide-containing layer remains bare, to bond at least some of the nitrogen to silicon proximate the nitrogen; the nitrogen-enriched region remaining confined to the upper half of the silicon-oxide-containing layer during the annealing (Col.3, lines: 45-55).

Claim 12 (previously presented): The method of claim 11 wherein the nitrogen- enriched region is formed only in the upper third of the silicon-oxide-containing layer by the exposing (Col.3, lines: 30-40).

Claim13 (previously presented): The method of claim 11 wherein the nitrogen- enriched region is formed only in the upper third of the silicon-oxide-containing layer by the exposing and remains confined to the upper third of the silicon-oxide- containing layer during the annealing (Col.3, lines: 30-40).

Claim 14 (previously presented): The method of claim 11 wherein the nitrogen- enriched region is formed only in the upper fourth of the silicon-oxide-containing layer by the exposing and remains confined to the upper fourth of the silicon-oxide- containing layer during the annealing (Col.3, lines: 30-40).

Claim 15 (previously presented): The method of claim 11 wherein the nitrogen- enriched region is formed only in the upper fifth of the silicon-oxide-containing layer by the

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exposing and remains confined to the upper fifth of the silicon-oxide- containing layer during the annealing (Col.3, lines: 30-40).

Claim 16 (previously presented): The method of claim 11 wherein the silicon-oxide- containing layer is maintained at a temperature of less than 200°C during the exposing (Col.3, lines: 54-55).

Claim 17 (original): The method of claim 11 wherein the plasma is maintained with a power of from about 500 watts to about 5000 watts during the exposing (Col.3, lines: 54-56).

Claim 18 (original): The method of claim 11 wherein the exposing occurs within a reactor, and wherein a pressure within the reactor is from about 5 mTorr to about 10 mTorr during the exposing (Col.3-4, lines: 55-20).

Claim 19 (original): The method of claim 11 wherein the exposing occurs for a time of less than or equal to about 1 minute (Col.3, lines: 55-65).

Claim 48 (previously presented): The method of claim 11 wherein the thermal annealing comprises thermal processing at a temperature of about 700°C for a time of about 30 seconds (Col.5, lines: 5-15).

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Claim 49 (previously presented): The method of claim 11 wherein the thermal annealing comprises thermal processing at a temperature of about 1050°C for a time of about 5 seconds (Col.5, lines: 5-15).

Claim 50 (previously presented): The method of claim 11 wherein the thermal annealing comprises rapid thermal processing at a ramp rate of at least about 50°C/sec to a process temperature of less than 1000°C, with the process temperature being maintained for at least about 30 seconds (Col.5, lines: 5-15).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M. Schillinger whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Laura M Schillinger', with a large, stylized flourish at the end.

Laura M Schillinger  
Primary Examiner  
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10/27/06